

Effects of variability of weather and temperature extremes on cardiovascular diseases

Vliv proměnlivosti počasí a teplotních extrémů na onemocnění oběhové soustavy

Posudek oponenta

The evaluation of this thesis is given mainly in the Australian and international context. Theses by publications, such as this one, are highly regarded and turning research into publications is considered an essential academic skill.

1. Current topicality of the thesis theme

The topic of this thesis is very relevant, given the trends in population age structure in developed countries and in climate change. Cardiovascular diseases (CVD) are one of the most frequent causes of death in the developed world and therefore one of the most important research priorities. The candidate has investigated the CVD category and some of its subsets by age and gender for fatal and non-fatal outcomes due to cold and heat effects. This thesis is important and original at several levels:

- Effects of cold extremes on human health have been somewhat neglected recently, and this work fills important gaps in our understanding of the effect of cold weather on human populations.
- Studies on the effects of heat and cold on subsets of CVDs have also been limited; and investigating the acute alongside the chronic CVD diseases is highly beneficial.
- The role of gender and age on environmental effects has been suggested by others, but the current results are inconclusive and limited. This work contributes to enlarge the knowledge baseline.
- The comparison of morbidity and mortality is a valuable contribution.

2. Fulfilment of the thesis aims

In my opinion, the aims of the thesis have been fulfilled. A major part of the thesis consists of four journal papers; three have been published and one was accepted and published online. Therefore most of the thesis has been already subject to scrutiny by international peers and experts in the climate and health research areas. Overall, the thesis synthesises successfully the relevant elements of the literature, demonstrates understanding of complex methodological procedures and provides critical appraisal of results, relating them to existing knowledge.

3. Comments and questions

Here are just some minor comments and recommendations:

- If the thesis will be published online, I would recommend using one style of English (either British or American). At the moment there are some instances in the first section of the thesis, where both styles are used.
- The 80-84 age group seems to be missing on page 9, paragraph 1
- I would like to see a section on limitations of the research and justifications (lack of adjustment for air pollution, spatial variations in temperature and how it relates to the

results of the study, ecological fallacy, etc.; not as criticism but to show awareness). Suggestions for future research would be useful (if this cannot be inserted into the thesis at this point, it may be discussed during the defence?).

4. Benefits of the thesis for further development of science and practical implementation

The thesis shows substantial and original contribution to our knowledge of temperature extremes on human health. Particularly that heat and cold effects can be disease-, age-, and gender- specific. As stated by the candidate, the results of this work could be used for the development of specific warning and prevention systems.

5. Language quality/Clarity

The thesis is mainly written in English, of a high level suited to the discipline. The thesis is very well written – persuasively and critically, consistent with the doctoral level. It is clear and concise, and demonstrates good communication and academic writing skills.

6. Conclusion

The aims of the thesis have been fulfilled and the candidate is well prepared to contribute in her research area at the international level. I congratulate the candidate on her achievement and wish her success in her future career.

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